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ABSTRACT

This study was concerned with the classroom adjustment of the nursery school child and the role of the teacher as a facilitator of change in adjustment. The first objective was to increase the value of the teacher's social responses of attention and approval in children who seemed to value these responses least, and the second objective was to assess whether an increase in the value of the teacher's social responses would produce increases in classroom adjustment. One member of each of 12 pairs of low attraction children was rendomly assigned to the experimental condition, and the other was assigned to the control condition. The assistant teacher in each class served as the treatment agent who implemented a 19-session program of interaction with the child. The treatment program, derived from principles of desensitization and positive attitude conditioning, was designed to reduce aversion or dislike and increase attraction to or liking of the teacher. All nursery school children were pre- and post-tested on a 26-item rating scale of classroom adjustment. Significant increases were shown in social interaction and compatibility by the children nominated as shy/avoidant or unresponsive. (Author/DB)

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EFFECTS OF TEACHER BEHAVIOR MODIFICATION ON UNRESPONSIVE STUDENTS

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November 1971

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Effects of Teacher Behavior Modification on Unresponsive Students

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Summary

This study was concerned with the classroom adjustment of the nursery school child and the role of the teacher as a facilitator of change in adjustment. Many studies have shown that the contingent application of reinforcement can modify a wide range of classroom behavior. However, the demonstrable improvements quickly fade when tangible back-up reinforcements are removed. In the natural environment of the classroom the teacher typically uses social approval as a reward and disapproval as punishment in an effort to modify behavior. However, if a child does not value either of these reinforcements, his behavior is not likely to be influenced by the teacher's responses.

The purpose of this investigation was two fold: the first objective was to increase the value of the teacher's social responses of attention and approval in children who seemed to value these responses least; and the second was to assess whether an increase in the value of the teacher's social responses would produce increases in classroom adjustment. The first phase of the study consisted of selecting children whose behavior suggested that they did not value teacher attention and approval, a condition subsequently referred to as low attraction. On the basis of teacher nominations two such groups were formed, an unresponsive group (indifferent, unmanageable) and a shy/avoidant group. Contrasted with these groups was a high attraction group consisting of children who were at ease and responsive to teachers. The validity of teacher nominations was checked by observing the nominated children in a structured interaction with the assistant teacher. On the basis of room assignment and magnitude of a composite attraction score, 12 pairs of low attraction children were constituted. One member of each pair was randomly assigned to the experimental condition and the other to the control condition. Each of six classrooms with 18 pupils each then contained two experimental subjects and two control subjects.

The assistant teacher in each class served as the treatment agent who implemented a 19-session program of interaction with the child. The treatment program, derived from principles of desensitization and positive attitude conditioning, was designed to reduce aversion or dislike and increase attraction to or liking of the teacher. The initial sessions in this graduated program consisted of paying noncontingent compliments

to the child in increasing number over several days, followed by periods of individual conversation. Later there were individual brief excursions from the classroom with the treating teacher, and finally a series of 10 to 15 minute play sessions together in a separate room in activities of the child's choosing.

Posttreatment measures assessed attraction to the treating teacher via affect ratings and the change in verbal responsiveness and eye contact from pre- to posttreatment structured interviews. There was a tendency for subjects in the experimental group to show greater increases in verbal responsiveness than the matched control subjects ($p < .08$). Increase in eye contact showed no mean difference, however, the control group showed greater variability of change than the experimental group. At the posttreatment interview the level of affect of experimental subjects as rated from videotape by naive judges was significantly more positive ($p < .01$) than for matched control subjects, thus affording evidence of an increase in attraction to the teacher as a function of the treatment.

There was no differential change in the strength of their attachments to peers, in the number of peers attached to the subject, or in affect during interaction with an unfamiliar adult as a function of the treatment. Thus, the increase in attraction seemed to be restricted to the treating teacher.

A 26-item rating scale of classroom adjustment was completed for all nursery school children in November (pretreatment) and again in May (three months posttreatment). The following three factors were derived from a factor analysis of the November ratings: Social Assertiveness, Social Compatibility, and Intellectual Competency. The November factor weights were used to derive factor scores from the November and May ratings. Comparisons of the experimental and control subjects with regard to change from November to May on each of these factors revealed no significant differences. Thus, there was no evidence of a differential effect on classroom adjustment of a treatment designed to increase attraction to the teacher. Tests for interaction between treatment condition and personality type, i.e., whether the child was nominated as unresponsive or shy/avoidant, proved to be nonsignificant in all instances.

Supplementary analyses of variables assessed for the entire nursery school population in Fall and Spring provided a fuller description of the shy/avoidant subgroup and the unresponsive subgroup as contrasted with middle and high attraction subgroups. Children nominated by teachers as shy and avoidant of adults were found to have weak attachments to peers and few peers attached to them. They were also very low on social assertiveness and showed negative affect in interaction with a strange adult during test administration. Significant increases from Fall to Spring on strength of peer attachments, social assertiveness, and affect during testing indicated improvement in the shy/avoidant child's tolerance for social interaction with peers and adults; however, they remained the lowest of the subgroups on these dimensions.

Children nominated as unresponsive were initially inferior to all other groups on the Social Compatibility factor. They were slightly lower than the average in number of attached classmates but similar to the average in strength of attachments to peers. This group showed significant increases in social compatibility from November to May at which time they no longer differed from the average on the social compatibility measure. Neither the shy/avoidant nor the unresponsive subgroups differed from the middle attraction group on intellectual competency.

Failure to find the predicted differential change in adjustment between experimental and control subjects was discussed in terms of the adequacy of the naturally occurring classroom reinforcement contingencies and the likelihood of spread of treatment effects to control subjects. The possibility was considered that the treating teachers, once having been encouraged in the use of new techniques for approaching shy/avoidant and unresponsive children, may have used these procedures unwittingly for control children in their class, since the controls were behaviorally similar to experimental subjects and not identified as controls. It was recommended that future studies on this topic use different teachers for experimental and control subjects in order to eliminate the possibility that control subjects could be influenced by experimentally induced changes in teacher behavior.

Introduction

In any nursery school classroom there are a few students who in the judgment of teachers have behavioral characteristics which are neither conducive to academic success nor satisfying interpersonal relationships. If unaltered, these maladaptive behaviors are likely to result in cumulative learning deficits eventuating in academic failure and an aversion to the academic settings. (See Cowen, Zax, Izzo & Frost, 1966; and Stennett, 1966). Intervention at the preschool level can be justified on the grounds that behavior patterns observed at this age tend to persist throughout childhood (Van Alstyne & Hattwick, 1939; MacFarland, Allen & Ronzik, 1954).

The contingent application of reinforcement has proven successful in the modification of a wide range of classroom behavior (see recent review by O'Leary and Drabman, 1971). However, the demonstrable improvements in behavior observed under programs of contingent reinforcement quickly fade when the tangible back-up reinforcers are removed. Also there is little or no generalization of improvement from one classroom situation to another or even in the same situation from morning to afternoon. Baer, Wolf, and Risley (1968) have responded to such demures, that "Generalization should be programmed rather than expected or lamented" (p. 97)." In practice this means extending the successful contingent reinforcement program to any and all situations in which the improved behavior is desired. Alternatively, the program may be structured to build secondary reinforcers which become progressively similar to those available in the natural (unprogrammed) environment and to shape up behaviors or behavior chains which are similar to those required to obtain "natural" reinforcers (such as good grades).

In the natural ecology of traditional educational settings, it is the approval and disapproval of the teacher and tokens significant of her approval and disapproval that are dispensed in a contingent manner with respect to the quality of the child's social and academic behavior. As Havinghurst (1970) has stated so clearly, if the child does not value the reinforcements which the teacher makes contingent upon his classroom behavior, those contingencies will have no influence on the child. It logically follows that,

after several weeks in the setting, the children whose behavior least conforms to the teacher's desires or standards may least value the reinforcements which she has been using to reward behaviors which approximate that standard. This point is recognized by O'Leary and Drabman (1971) who strongly recommend that a wide range of backup reinforcements be employed with a token economy in the hope of providing at least one thing that each deviant child values.

The purpose of this investigation was two fold: the first objective was to increase the value of teacher social responses (attention, approval, and disapproval) for nursery school children, and the second was to assess whether an increase in the value of teacher's social responses would produce increases in classroom adjustment, in the absence of an experimental alteration of the classroom contingencies for social reinforcement employed by the teacher. The first phase of the study consisted of the selection of children from the total nursery school population whose behavior suggested that they did not value the teachers social approval and attention. Children who exhibited shy and avoidant behavior or unresponsiveness in their interactions with teachers were selected for assignment to the treatment or control group. The second phase of the study consisted of implementing a treatment program designed to increase the value of the teacher's social approval and attraction. In other words, the second aim was to increase the child's attention to the teacher.

The Rationale of Treatment

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In designing the treatment program, it was assumed that for those children who were shy and avoidant, the teacher had remained novel and aversive. The treatment program was designed first to reduce and eliminate aversion to the teacher. There are several converging lines of evidence in the literature which indicate that mere exposure to a stimulus complex reduces its aversive quality. Animal studies on the reduction of fear recently reviewed by Wilson and Davison (1971) indicate that prolonged exposure to the fear stimulus is the major therapeutic ingredient in reducing fear. Graded exposure paired with anxiety-competing responses may be superior to graded exposure alone. Also, prolonged, forced exposure to a fear stimulus seems to facilitate extinction

of fear/avoidance rather than to "resensitize" the subject. Recent reviews of experimental studies of systematic desensitization with human subjects led to similar conclusions (Franks, 1969; Wilkins, 1971). More specifically studies of isolated fears in humans by Cooke (1966, 1968), Wolpin and Raines (1966), and Proctor (1968) also indicate that repeated exposure to the feared stimulus reduces fear and avoidance.

The literature cited above concerns therapeutic procedures which reduce fear and avoidance and hence deal with only half the range of the affect continuum, that from negative to neutral. Of equal concern in this investigation was the range from neutral to positive. Therefore, an effort was made to incorporate experiences in the treatment procedure which would develop in subjects a positive attraction to teachers. There is a fairly sizable body of literature which suggests that mere exposure to a stimulus not only reduces fear but also results in a positive evaluation of, or attraction to, the stimulus. Work by Cairns (1967) and Scott (1963) on the development of social attachments in animals suggests that repeated exposure to a salient stimulus object is sufficient for the development of a social attachment. A series of studies by Zajonc (1968) and his students has shown that repeated exposure to nonsence syllables, Turkish words, Chinese characters, and pictures of people results in increased liking. Studies by Matlin (1970) support the theory that this increased liking is a consequence of the reduced response conflict which accrues with repeated exposure.

It would appear from the literature reviewed here that mere exposure of sufficient intensity and duration to an initially aversive or fear evoking stimulus will, at the outset, extinguish fear/avoidance, and in addition, if sufficiently prolonged, will lead to a liking or positive attraction to the stimulus (see Sheldon, 1969). The treatment procedures employed in this study were designed to bring about a gradual increase in exposure to and interaction with the assistant teacher on the part of the experimental subjects. Also an effort was made to evoke positive affective states at the outset of each exposure-interaction period which would tend to compete with anxiety and avoidance responses.

In addition to the exposure effects, it was hoped that, once the treating teacher had lost her aversive or fear-eliciting value for the child, positive conditioning would augment the child's attraction to the treating teacher and generalize to other adults. A number of investigations of the antecedents of interpersonal attraction have shown that contiguity between a previously neutral person and direct reinforcement (Janes & Lott, 1964; Lott & Lott, 1969; Griffitt, 1968) or vicarious reinforcement (Lott, Lott & Mathews, 1969) to the subjects is a sufficient condition for the development of liking. These effects were independent of any instrumental response on the subject's part. Similarly, Berkowitz, Butterfield, Zigler (1965) found that, after the effects of satiation and deprivation had been given time to dissipate, there was a significant change which persisted over time, in the effectiveness of the agent as a social reinforcer in the marble dropping task as a function of the affective quality of an initial interaction with a child. McCoy and Zigler (1965) also found that planned periods of positive individual interaction with a stranger significantly increased the effectiveness of the stranger as an agent of social reinforcement.

If the treatment employed produced increases in subjects' attraction to the treating assistant teacher and generalization of these effects to other teachers, it was anticipated that overall classroom adjustment would improve. Such an effect would be predicted from several perspectives. From an operant conditioning viewpoint, these children would be more responsive to the social reinforcements dispensed by teachers. Literature on modeling (Flanders, 1968) indicates that the behavior of adults is more likely to be emulated if the adult model (the teacher in this case) controls valued reinforcements. To the extent the teacher's approval and attention is increased in value by the treatment, the tendency to imitate her more mature behavior may be increased. According to the review by Kohlberg (1963), moral development and identification are facilitated by positive attitudes toward the parent, which is consistent with the present predictions. Also research on attitude and behavior change in social psychological and psychotherapy research has consistently shown that interpersonal attraction increases receptivity to interpersonal influence (Goldstein, 1971).

Method

Subjects

The 24 experimental subjects were selected from the total population of 108 four-year-olds enrolled in six pre-school classes at the Laboratory Nursery School in Liverpool, New York, a facility of the Syracuse University Early Childhood Education Center. Each class of 18 pupils was staffed by a head teacher, an assistant teacher, and a student teacher. These pupils were drawn on a voluntary basis from the Liverpool School District which is predominantly Caucasian and middle-class. Repeated testing of samples from the nursery school indicated that the mean Stanford-Binet IQ was 118 with a standard deviation of 17 points. Pupils who would be eligible for admission to kindergarten the following year were admitted to the pre-school program in order of the date of the application and proportionately by area of residence.

Selection of Study Children

Beginning at the sixth week of nursery school, teachers' nominations were employed in the selection of children to serve in the high attraction and low attraction groups. Each head and assistant teacher was asked to select from her class of 18 (a) the four children who were most shy and avoidant of interaction with adults, (b) the four children who were most unresponsive to teachers' direction and indifferent to approval or disapproval, and (c) the six children who were most at ease and responsive in interactions with teachers. (See form in Appendix A.). The list of shy/avoidant and unresponsive children need not have been mutually exclusive and, in many cases, were not. The nature of each category was extensively discussed and behavior examples were provided. The teachers were given a week to consider their nominations and asked to rate on a three point scale the closeness of fit of the shy/avoidant and unresponsive nominees to those respective categories and to rank order the "at ease and responsive" nominees.

From each classroom four or five children were selected from the shy/avoidant and unresponsive nominees for inclusion in the low attraction group. An equal number of the "at ease and responsive" nominees were selected from

each classroom for the high attraction group. The minimum criterion for inclusion was nomination by both head and assistant teacher for the same category. When head and assistant teachers were in agreement on more than the requisite number of children for each category, closeness of fit and rank orders determined choice. Preliminary assignment of 27 children from the "at ease and responsive" category was made to the high Attracted group, and 14 from the shy/avoidant category and 14 from the unresponsive category were assigned to the Low Attraction group.

Validation of Teachers' Nominations. In an effort to obtain independent evidence of the validity of the teachers' nominations, ratings were made of each child in the high and low attraction groups during a structured interview with his assistant teacher. The interview was conducted in the classroom before a one-way mirror at a small table containing a microphone. The child's behavior was rated from outside the room by the experimenter and his assistant. Each assistant teacher studied the interview format, memorized a few key sentences and then was given the names of children in her class to interview. No mention of the prior nominations was made in this connection and the first children interviewed were middle-attraction children selected for practice. The interview procedure consisted of inviting the child to come sit at the table, asking two open-ended questions, and responding in a standard fashion to the child's reply (see Appendix B). The two questions employed were selected after pilot work which indicated that they would elicit more than a one-word reply, and because all children had the requisite information to produce a multiple-word response.

The first interview score was time elapsed between the teacher's invitation to come with her to the interview table and subject's response indicating he was getting up to go with her, in other words, the promptness of following. The second rating coded the length of the child's verbal responsiveness, first to question one and separately to question two. The third variable was a rating of the extent of eye contact made by the child with the teacher at the time of his response to questions one and two, respectively.

At the conclusion of the structured interview a problem situation was created for the child which could not be solved without the teacher's assistance. After crayons and pencils had been removed from their usual storage location, the child was given a piece of paper and seated at a table ten feet from the teacher's seat. The teacher asked the child to color a picture for her and then returned to her seat at the interview table. The score derived from the child's response was intended to reflect the child's degree of social inhibition about seeking assistance.

Three additional indices of responsiveness to teachers and other adults were employed. One was a rating of inattention to a story read in a group situation during the second week of nursery school. The second was a rating of the child's ease of leaving the classroom with an experimenter for administration of the Raven Progressive Matrices. The third score was a rating of the child's affect during this test administration. Ease was rated on a five-point scale and affect on a seven-point scale, ranging from 1, "very tense, uncomfortable, apparently unhappy" to 7, "very happy and elated during testing."

Analysis of Pre-experimental Selection Variables. As a check on the reliability of the observational ratings made in relation to the structured interview, the judgments by the two observers were correlated. The total sample of 55 children interviewed were employed in calculating these correlations. The inter-rater correlation for promptness of following was .91; the ratings for verbal responsiveness on questions 1 and 2 correlated .79 and .84, respectively; the ratings of eye contact on questions 1 and 2 correlated .70 and .65 respectively; and finally the ratings of social inhibition correlated .97. No reliability data was available on inattention during the group story, ease of leaving, or affect during testing. As a check on the validity of the teacher's nominations and of the behavioral ratings listed above as indices of the child's comfort with and attention to adults, the scores of the high and low attracted groups were compared on each variable by means of t-tests. The results of these comparisons are presented in Table 1. The 24 most and 24 least attracted subjects (based on teacher nominations) were used in making these comparisons. For the verbal responsiveness and eye contact variables, the average of the ratings from questions 1 and 2 was employed in the analyses. The average of the two rating judgments on inhibition were employed.

Table 1

Means and Standard Deviations of Selection Variables for Children Nominated as Being Shy or Avoidant (S/A), Unresponsive (UR) or Highly Attracted (HA); t-Test Comparisons Among Groups

Variable	Group	N	M	SD	Groups Compared	t
Promptness of Following	S/A	12	4.08	1.4	S/A vs. HA	1.73+
	UR	12	3.96	1.3	UR vs. HA	2.13*
	HA	24	4.73	.9	S/A + UR vs. HA	2.21*
Verbal Responsiveness	S/A	12	3.35	1.0	S/A vs. HA	2.58*
	UR	12	3.58	.8	UR vs. HA	2.05*
	HA	24	4.20	.9	S/A + UR vs. HA	2.82*
Eye Contact	S/A	12	3.40	.9	S/A vs. HA	.85
	UR	12	2.92	.9	UR vs. HA	2.52*
	HA	24	3.66	.8	S/A + UR vs. HA	1.97+
Social Inhibition	S/A	12	2.75	1.4	S/A vs. HA	1.48
	UR	12	3.08	1.4	UR vs. HA	.71
	HA	24	3.40	1.1	S/A + UR vs. HA	1.30
Affect during Raven Test	S/A	10	3.20	1.7	S/A vs. HA	4.55**
	UR	9	4.11	2.0	UR vs. HA	2.79**
	HA	17	6.00	1.5	S/A + UR vs. HA	4.26**
Ease of Leaving Class	S/A	10	4.20	1.0	S/A vs. HA	.92
	UR	9	4 56	.7	UR vs. HA	.09
	HA	17	4.59	1.0	S/A + UR vs. HA	.69
Story Inattention	S/A	12	1.00	1.4	S/A vs. HA	.75
	UR	10	1.30	1.5	UR vs. HA	1.39
	HA	23	.70	1.0	S/A + UR vs. HA	1.22
ATTR	S/A	12	3.35	.7	S/A vs. HA	3.93**
	UR	12	3.35	.6	UR vs. HA	4.09**
	HA	24	4.16	.6	S/A + UR vs. HA	4.80**

$^{+}p < .10$

$^{*}p < .05$

$^{**}p < .01$

As Table 1 shows, the mean differences between the high and low attraction groups were all in the expected direction. The high attraction subjects more readily followed the teacher to begin the structured interview ($p < .05$), verbalized more extensively in response to the open-ended questions ($p < .01$), exhibited more eye contact with the teacher during the interview ($p < .10$), and exhibited more positive affect during the intelligence test administration ($p < .01$). The difference between the high and low attraction groups was not significant on the following three variables: attention to the group story, ease of leaving the room for test administration, and social initiative on the coloring problem.

Scores of the four observational ratings which significantly differentiated the two groups (Follow, Verbal, Eye, and Affect) were combined to produce a composite attraction score (ATTR). ATTR significantly differentiated the High and Low Attraction groups at the .001 level. The bi-serial correlation between ATTR and membership in the High versus the Low Attraction group was .59 ($p < .001$, $df = 53$). The composite ATTR score was also considered, along with the teachers' nominations, in making the final selection of subjects for the experimental study. Six additional subjects beyond the 24 low attraction and 24 high attraction subjects referred to above had received common endorsement by both the head and assistant teacher. In selecting the two groups of 24 for use in the treatment phase, the three subjects with lowest ATTR scores among the attracted subjects were deleted and the four subjects with the highest ATTR scores among the low attraction group were deleted.

Design and Procedure

The ATTR score was employed in the formation of matched pairs of Low Attraction subjects. The resulting subject pairs had composite ATTR scores which differed less than .5. Members of each pair were then randomly assigned to the experimental and control group. In 10 of the 12 pairs, it was possible to create matches from children within the same classroom. In the end, each classroom contained four children classified as low attraction to the teacher, two assigned to the experimental treatment group and two assigned to the control group. The teachers were never informed as to the identity of any of the control children.

Each classroom was staffed by a head teacher, an assistant teacher, and a student teacher. In the hope of developing an effective treatment procedure which could be implemented by paraprofessionals, the assistant teachers were sought as treatment agents for the experimental children. This effort was successful in five of six classes. The sixth class had two alternating assistant teachers. To achieve continuity, the head teacher, who held a master's degree in child development, served as the treatment agent. (She is included when later reference is made to the group of "assistant" or "treating" teachers.) None of the other treating teachers had formal training in education, although one was a college graduate. Three had two years of experience, one had one year, and one had no previous teaching experience.

Preparation for Treatment. The experimenter met with the assistant teachers, discussed the nature of the treatment proposed, and asked their assistance with the project. All were eager to participate. The overall philosophy of treatment, consisting in gradual approach and positive conditioning, was thoroughly discussed. The teachers' opinions and suggestions regarding implementation of treatment were solicited. It was decided not to alter any aspect of the teacher's normal classroom activities, but rather to add to those activities additional interactions with the experimental children. The supplementary interactions chosen were ones which would evoke positive affect in the child. Thus, the paramount objective of all supplementary interactions was to promote contact between teacher and child and to evoke a positive affective emotional state in the child which could be associated with the assistant teacher. A second principle of treatment might be called "gradual escalation." The objective here was to avoid large, precipitate increases in attention which might provoke anxiety, yet to make increases which were clearly discriminable, positive in nature, and progressive over the first half of the 19 treatment sessions. Thus the treatment consisted of gradually increasing noncontingent positive social reinforcement.

Treatment. Three types of activities were employed in different amounts at different stages in the treatment course. The initial activity consisted simply of verbal compliments delivered non-contingently in the classroom. Statements such as "My, that's a nice sweater you have on today!" "I like that house you're building!" or "You poured the juice very well!" The second type of interaction consisted of conversations, not exceeding five minutes, conducted in the classroom on topics which were likely to elicit positive affect in the child; for example, talking about the child's current play activity, some pleasurable event to which he was looking forward, or some recent pleasurable activity in or outside of the nursery school. The third type of activity, initiated at the fifth treatment session, consisted of pleasurable interactions with the assistant teacher outside of the classroom. The first of these involved brief trips to the storeroom or to get a drink, conducted individually with the assistant teacher. Later on, interaction sessions consisted of from 10 to 15 minutes of individual play with the assistant teacher outside of the classroom in a separate, small experimental room. In these latter sessions, teachers were free to choose whatever play materials they wished and also to bring materials from home or have the child bring materials from home to be employed in these sessions. Great freedom was given to the assistant teachers in order to achieve the objective of making this individual play interaction an emotionally positive experience for the child. The treatment schedule designating the activity for each session is presented in Appendix C.

The experimenter and his assistants met in a group with the assistant teachers after every other treatment session. Each day the assistant teachers made a written record of the compliments employed in the sessions and the content of the conversation or play activity. The notes served as a basis for discussion in the group review sessions. The review session proved to be extremely valuable in providing emotional support and encouragement for the teachers. They assisted one another by relating the types of interaction which successfully evoked positive emotional responses from their children.

Timing of Treatment Sessions. The first treatment session occurred on December 4th. Classes met four days a week--Monday, Tuesday, Thursday and Friday. These sessions were held prior to the two-week break for Christmas vacation. Treatment resumed for two weeks in January. Since the nursery school followed the University schedule, there was another two-week recess between semesters. Treatment was again resumed for three final sessions in February. Several treatments for individual children were not administered on the scheduled day due to absence of the child or the teacher. However, the serial order of treatment was maintained for all children even though a given ordinal number treatment occurred on different days for different children. The first children finished the nineteen treatments by February 10th and the last child received the last treatment on February 20th.

Post-treatment Follow-up

Three categories of dependent variables were employed in the follow-up sessions. The first category included measures of the child's comfort and ease of interaction with the treating teacher. The second category, which was designed to assess generalization effects, included measures of the child's ease of interaction with a relatively unfamiliar adult and measures of his attachment to peers. Measures from categories one and two were administered within three weeks of the conclusion of the treatment phase. The "adult" measure was repeated in May. The third category consisted of rating scales chosen to assess possible later change in the child's classroom adjustment as a result of treatment. These rating scales of adjustment were administered in May. The indices of classroom adjustment and peer attachment had also been given in November, prior to treatment, but were not employed in the selection of subjects.

Attraction to treating teacher. A structured interview similar to that used in the selection battery was conducted by the assistant teacher during the two weeks immediately following treatment. Interviews were conducted individually in a separate experimental room and unobtrusively videotaped through a one-way window. The two questions asked by the teacher were similar in format but

differed in specific content from the preselection interview. Also an unstructured segment was added to the session. After practice with middle-attraction children, the treating teacher interviewed each of the high and low attraction children from her classroom. Unfortunately, two control subjects were unavailable for post-treatment assessment.

Since the rating of affect during testing in the preselection battery was so highly related to the teachers' nominations of High and Low Attracted subjects, a rating of affect was added to eye contact and verbal responsiveness, variables previously rated from the structured interview. Promptness of following was not rated because of uncontrolled factors influencing this behavior in each classroom. Each of the three variables was rated from videotape by a different pair of graduate students, all of whom were unaware of the treatment assignments and hypotheses. The reliability coefficients for verbalization, eye contact, and affect were .92, .79, and .79, respectively (N = 54).

Generalization to another adult. Graduate student examiners readministered the Raven Progressive Matrices to the high and low attraction subjects in the two weeks immediately following treatment and also in May to the total nursery school sample. A rating of affect during the test was made at each administration.

Classroom adjustment. The 26-item Behavior Rating Scale for Children (Grossman & Levy, 1968) was completed independently by head and assistant teachers in late October and again in May for all children in their classrooms. A principle components analysis was computed on the averaged ratings of head and assistant teachers from the October and May administrations. The component structure from the October administration was practically identical with the May administration. Each analysis yielded five factors with eigen values greater than one. The first three factors accounted for 68 percent of the total variance and appeared to be highly similar to those obtained by Grossman and Levy on different samples of nursery school children. The October rating scale data was employed in a varimax rotation of the first three factors, and sets of rotated factor weights were derived for these three factors, which

were labeled Intellectual Competency, Social Assertiveness, and Social Compatibility. The means, standard deviations, and rotated factor weights for individual items from the October administration were used to derive factor scores separately for head and assistant teachers for the October and May administrations of the Behavior Rating Scale. The factor scores were transformed to T score scales with a mean of 50 and SD of 10. (See Appendix D for rating scales and derivation of factor scores.)

Peer Association Patterns. In November and March each head and assistant independently completed an Inventory of Peer Association for all the children in her classroom. Teachers were asked to list, for each child, the four classmates with whom the child most preferred to play or associate, and also to indicate for each listed child the strength of the preference using a three-point scale. (See Appendix C for details of instructions.)

From this basic data two scores were derived: (a) the average strength of peer attachments (ATTS) which consisted of the average preference rating of the four closest associations, and (b) object of attachment (OBAT) which was the number of classmates who showed some attachment to the subject. These two scores were computed separately from head and assistant teachers' ratings for both the November and March administrations of the Inventory of Peer Associations.

A summary of pre-and post-test measurement is presented in Table 2.

Results

Post-treatment interview. Low Attraction control and experimental subjects were compared via matched *t*-tests on degree of change in verbalization and eye contact from pre- to post-treatment interview and also on affect, a variable rated only for the post-treatment interview. As shown in Table 3, there was a greater mean increase in verbal responsiveness in the experimental group than in the control group. This difference approached but did not reach statistical significance ($p = .08$). Thus, there was a tendency for subjects in the experimental group to show greater increases in verbal responsiveness from pre- to post-treatment interview with the treating teacher than for subjects in the

Table 2

Organization of the Study

Measurement Situation or Device Variables Derived Raters Employed	Sample Measured			
		Pretreatment	Posttreatment	Follow-up
	Nov.	Dec.	Feb. & Mar.	May
Nomination of Shy/Avoidant, Unresponsive, and at ease/ responsive pupils. Attraction subgroup assignment Head and Assistant Teachers		Total		
Pretreatment Structured Interview with Assistant Teacher Pretreatment verbalization rating Pretreatment eye contact Latency of following teacher Response to coloring task paradox Experimenter and Graduate Assistant		High & Low Attraction Nominees		
Posttreatment Videotaped Interview with Assistant Teacher Posttreatment verbalization rating Posttreatment eye contact Affect during posttreatment Clinical Psychology Graduate Students			Low Attr. Control & Exper. Ss High Attr. Subgroup	

Table 2--Cont.

Measurement Situation or Device Variables Derived Raters Employed	Sample Measured			
		Pretreatment	Posttreatment	Follow-up
	Nov.	Dec.	Feb. & Mar.	May
Rating Scale of Adjustment, 26-items Intellectual Competency factor Social Assertiveness factor Social Compatibility factor Head and Assistant Teachers	Total			Total
Peer Association Patterns Report Form Ave. attachment strength to friends (ATTS) Freq. object of others attachment (OBAT) Head and Assistant Teacher	Total		Total	
Raven Progressive Matrices Total items correct Affect during test administration Graduate Student Examiners	Total		Low Attr. Control & Exper. Ss High Attr. Subgroup	Total

Table 3

Means, Standard Deviations and Matched *t*-Test Comparisons of Experimental and Control Subjects on Variables Rated from Structured Interviews with the Assistant (Treating) Teachers

	Variable					
	Change in Verbal Responsiveness		Change in Eye Contact		Affect During Post-treatment Interview	
Group	M	SD	M	SD	M	SD
Experimental (N = 10)	.50	.97	.52	.55	4.55	1.38
Control (N = 10)	-.33	1.03	.60	1.02	3.60	1.28
Comparison	*t*	*p*	*t*	*p*	*t*	*p*
Exper. vs. Control	1.99	<.10	-.22	ns	3.05	<.01

untreated control group. As can be seen in Table 3 the difference between the matched experimental and control subjects on mean change in eye contact from pre- to post-treatment interview was negligible. It may be noted however that variability of the change scores was significantly greater in the control group than in the experimental group ($F = 3.44$, $df = 9/9$, $p < .05$), indicating that control subjects had both marked increases and marked decreases in eye contact from their pre-treatment interview levels.

Ratings of affect from the video tapes of the post-treatment structured interview resulted in a more positive mean rating for experimental than for control subjects. Since four was the neutral point on the scale, it can be seen from the means of the respective groups presented in Table 3 that the control group was on the negative side of the neutral point while the experimental group was on the positive side. The matched t-test analysis revealed that the affect scores were significantly more positive for the experimental group than for the matched control group ($p < .01$). Thus the analysis of variables rated from the structured interview with the treating teacher suggested that the treatment had an effect on the behavior of the experimental subjects, an effect which is congruent with the prediction of increased attraction and positive feeling toward the treating teacher.

As a check for possible differences between the unresponsive and shy/avoidant subjects in response to the experimental treatment, verbal responsiveness and eye contact change scores and the post-treatment affect scores were analyzed in a 2-way analyses of variance (ANOVAs) with unweighted means correction for unequal cell size. These analyses revealed no significant interactions between personality type, i.e., whether unresponsive or shy/avoidant, and treatment condition. There was a nonsignificant trend ($p < .10$) for shy/avoidant subjects to increase verbal responsiveness in the experimental condition and to decrease verbal responsiveness in the control condition.

Peer Association Patterns. The effect of the treatment on the subjects' relationship with peers was assessed by comparing, via t-tests, the matched experimental and control subjects with regard to change in the average strength of attachment to friends (ATTS) and change in the

number of children attached to the subject (OBAT). The average of the rating by the head and the assistant teachers was employed in the analysis. Neither the ATTS change score nor the OBAT change score significantly differed between the experimental and control subjects. Thus the experimental and control groups showed equivalent degrees of change in these aspects of their relationships to peers from November to March.

Separate analyses of the head and assistant teachers' ratings of ATTS and OBAT also failed to show differential change. Two-way ANOVAs (experimental vs. control X unresponsive vs. shy/avoidant) employing first ATTS change scores and second OBAT change scores as dependent variables, revealed no significant interaction between treatment condition and personality type.

Classroom Adjustment Ratings. The effects of the experimental treatment on classroom adjustment were assessed by a comparison of the matched experimental and control subjects with regard to magnitude of change from November to May on three factors of classroom adjustment, Social Assertiveness, Social Compatibility, and Intellectual Competency. These comparisons employed two sets of factor scores, one derived from the ratings of head teachers and the other derived from the ratings of assistant teachers. No differences were found in the magnitude of change from November to May between the experimental and control groups on any of the three factor scores either based upon head or assistant teachers' ratings.

To check for interaction between personality type and treatment condition, two-way ANOVAs were computed on the change scores for Social Assertiveness, Social Compatibility, and Intellectual Competency. In this case the factor scores were derived from the average of the head and assistant teacher's ratings. No interaction of personality type with treatment was in evidence for Social Assertiveness or Social Compatibility change scores. The ANOVA for change on the Intellectual Competency factor yielded an interaction effect which approached significance ($F = 3.78$, $df = 1/20$, $p < .10$). Shy/avoidant subjects in the experimental condition and unresponsive subjects in the control condition tended to exhibit greater increases on the Intellectual Competency factor. Separate analyses of

head and assistant teachers' ratings indicated that this trend was less in evidence for assistant (treating) teachers' ratings than for head teachers' ratings.

Raven Progressive Matrices. To assess the effect of the treatment on cognitive performance matched experimental and control subjects were compared with *t*-tests, employing as dependent variables, first, the change in Raven score from October to February (immediate post-treatment) and, second, the change in Raven score from October to May. In the first analysis there was no difference between the Experimental and Control groups. In the second analysis the difference favored the control group ($t = 2.60$, $df = 10$, $p < .05$). The experimental group increased on the average 2.5 points and the control group increased 4.5 points from October to May.

A two-way ANOVA was computed on Raven October-May change scores employing personality type and treatment condition as the two factors. No interaction between personality type and treatment condition was found.

The examiners who administered the Raven were also asked to rate the subject's affect during test administration. Although a number of these October ratings were missing, with data on eight matched pairs of experimental and control subjects there was no trend toward a significant difference between the experimental and control subjects with regard to change in affect during Raven administration either from October to February or from October to May.

Supplementary Analyses

The preceding analyses focused upon differences in degree of change between the experimental and control subjects, but said little about change over the school year in the behavior and social relationships of the unresponsive and shy/avoidant subjects who constituted the Low Attraction group. Several of the measures were obtained in both the Fall and Spring for the total nursery school population. This data afforded the opportunity to assess the effect of the total nursery school experience on the adjustment of unresponsive and shy/avoidant subjects relative to an average group and a group who were highly responsive to and at ease with teachers.

The peer association scores (ATTS, OBAT), the three classroom adjustment factors (Social Assertiveness, Social Compatibility, Intellectual Competency), Raven Test scores, and ratings of affect during the Raven test administration were each analyzed in separate analyses of variance. The design was a 4 (Group: Unresponsive, Shy, Middle Attraction, High Attraction) X 2 (Time: Fall, Spring) ANOVA for repeated measures. The Middle Attraction group was constituted by exclusion, i.e., all subjects with Fall and Spring scores on a given variable who were not in either the High or Low Attraction groups as defined earlier were relegated to the Middle group which included about half the nursery school census (N = 55). Roughly one quarter were in the High group (N = 24) and the other quarter were in the Low Attraction group which was subdivided into an Unresponsive group (N = 12) and a Shy group (N = 12).

The analysis of ATTS yielded significant main effects for Group ($p < .001$) and Time ($p < .001$). The interaction between these two factors was not significant. Examination of the means in Table 4 revealed that the mean strength of attachment of Shy subjects was considerably lower than any other group. T-tests following the ANOVA indicated that at both November and March the Shy group differed significantly from all other groups at the .01 level and beyond. The High Attraction group had the highest mean attachment strength. The Unresponsive and Middle groups were slightly lower and about equal. These latter three groups did not differ significantly one from another. All groups increased in mean attachment strength from November to March with the greatest increases occurring for the Shy group and the Middle group.

In the analysis of OBAT, the main effect for Groups was significant beyond the .001 level, while neither Time nor the interaction of Groups with Time was significant. Examination of the means revealed that it was again the Shy group which had the lowest mean score and the High Attraction group which had the highest mean score. The Unresponsive and Middle Attraction groups were intermediate and not significantly different from each other. The High Attraction group differed significantly from all other groups at the .01 level and beyond, indicating that High subjects were the objects of attachment for more of their classmates than were children in the other three groups. The Shy subjects were objects of attachment for

Table 4

Group	N	Variables											
		ATTS		OBAT		Social Assert		Social Compat.		Intel. Compet.		Raven Test		Raven Test	
		Nov.	Mar.	Nov.	Mar.	Nov.	May	Nov.	May	Nov.	May	Nov.	May	Nov.	May
Low Unresponsive	12	1.62	1.78	3.4	3.2	49.1	53.5	39.6	47.2	43.8	46.1	10.3	14.0	4.3	4.8
Low Shy/ Avoid.	12	1.23	1.48	2.4	2.9	34.6	40.1	52.0	55.0	43.7	47.4	11.3	14.7	3.4	4.8
Middle	55	1.57	1.80	3.9	4.0	52.2	54.2	52.5	50.0	48.4	51.5	12.8	14.4	5.2	4.9
High	24	1.75	1.86	4.9	5.1	56.7	58.8	58.0	52.7	52.8	55.1	12.8	15.8	6.4	5.0
Source		F											
Group (G)		5.75		9.04**		20.79***		6.37***		2.98*		2.14		5.35**	
Time (T)		19.99**		1.01		26.45***		2.26		14.82***		43.67***		.94	
G X T		.46		.44		1.87		7.00***		.14		2.04		6.52**	

* $p < .05$
** $p < .01$
*** $p < .001$

Note--The means presented and the analysis of variance for each variable included only subjects with both Fall and Spring scores available. The N per group represents the maximum number of Ss in each group. The middle group had one less subject for ATTS and OBAT and three less for the Raven Test. Raven Affect scores were missing for 3 Unresponsive, 3 Shy/Avoidant, 22 Middle, and 10 High Subjects.

fewer classmates than other subjects; their difference from the Middle subjects reached the .01 level, however, they were not significantly lower than the Unresponsive subjects.

Analysis of the Social Assertiveness factor score yielded a pattern of effects very similar to that for ATTS. The main effects for Groups and Time were both significant beyond the .001 level. The interaction effect (Groups X Time) was not significant. The mean Social Assertiveness score for the Shy group was more than one standard deviation below all other groups and two standard deviations below the High Attraction group. The Shy group differed from each of the other three groups at the .01 level or beyond. The High Attraction group, which had the highest Social Assertiveness mean, differed from the Middle Attraction and Unresponsive groups at the .05 level. The latter two groups did not differ significantly. All groups showed increases in social assertiveness from November to May, with the greatest increase occurring in the Shy group.

The analysis of the Social Compatibility factor score revealed a significant Groups X Time interaction effect ($p < .001$) indicating that differences among the groups were not stable over time. Examinations of the group means presented in Table 4 and t-test comparisons among means revealed that the Unresponsive group had the lowest mean Social Compatibility score in both November and May. At the November assessment, the mean for the Unresponsive group was significantly different from each of the other groups at beyond the .001 level, and the High Attraction group had the highest Social Compatibility mean, differing from the Shy and Middle Attraction groups at the .05 level. The latter two groups did not differ at the November assessment. At the May assessment, the Unresponsive group still had the lowest mean Social Compatibility score, but differed significantly only from the Shy group ($p < .05$) which in May had the highest mean Social Compatibility score. No other intergroup differences were significant at the May assessment. The lowest group, the Unresponsive subjects, exhibited the greatest increase in Social Compatibility from November to May, and the change was significant at the .02 level. The increase for the Shy group was not statistically significant. The High and Middle Attraction groups significantly decreased in Social Compatibility from November to May (p's $< .01$ and .05, respectively).

The ANOVA for the Intellectual Competency score yielded significant main effects for groups ($p < .05$) and for Time ($p < .001$), but no significant interaction. All groups had higher ratings in May than November. The Unresponsive group had the lowest mean ratings and the High Attraction group had the highest mean rating, and this was the only intergroup comparison reaching the .05 level of significance.

Scores on the Raven Progressive Matrices were found to have a pattern of group means which were similar to those for the Intellectual Competency factor scores. The Unresponsive group had the lowest mean, followed by the Shy group, then the Middle and High Attraction groups. The main effect for groups did not, however, reach the .05 level ($p = .10$). The main effect for Time was highly significant, all groups showed mean increases from November to May of approximately one standard deviation. The interaction effect (Groups x Time) was not significant.

The rating of affect during the Raven test administration was also analyzed with the Group by Time repeated measures ANOVA. Unlike the other variables reported above, the November Test Affect scores were included in the attraction score used to make the final selection of subjects for the Low and High Attraction groups, therefore, the differences between groups on the November Test Affect scores are slightly inflated. Nonetheless, the ANOVA yielded a significant Groups x Time interaction effect ($p = .001$). There was no significant change in test affect for the Unresponsive group and the Middle Attraction group. The High Attraction group exhibited significantly less positive affect in May as compared to their Fall rating which was the highest of the four groups. There were no significant intergroup differences in the May rating of test affect.

Conclusions

The treatment program executed in this study was designed to increase attraction to the teacher in children who were initially unresponsive or shy and avoidant. The assessment made of control and experimental children in a structured interview with the teacher immediately after the

treatment provided some evidence that the treatment had an effect. The experimental subjects exhibited more positive affect than did their matched controls in a structured interview situation with the treating teacher. The experimental subjects also tended to show greater increases in verbal responsiveness than matched controls. Both of these observations are consistent with the view that the treatment had the desired impact of increasing attraction to the treating teacher. However, this evidence is not unassailable. It is possible that there were subtle differences between the teacher's behavior toward experimental as compared with control subjects during the post-treatment interview, differences which may have produced the more positive response on the part of the subjects with whom they had had programmed interactions. Such bias is very difficult to eliminate, since <u>any</u> assessment of the experimental subject's response to the treating teacher could be affected by subtle changes in the behavior of the treating teacher, changes which are a direct result of her more intimate contact with the experimental subjects. Although considerable effort was made to eliminate differential response on the teacher's part during the interview there is no way to be certain that these efforts were completely successful.

One effort made to get around this problem was to test for <u>generalization</u> of the anticipated treatment effects. If increased attraction to individuals other than the treating agent could be demonstrated, one would be more confident about the interpretation of the structured interview data. However, the absence of generalization would not necessarily mean that there were no effects of the treatment. One measure of generalization was the subjects' affect during interaction with an unfamiliar adult who administered the Raven test. Unfortunately, this comparison of control and experimental subjects failed to provide evidence of a generalized increase in attraction. Although all low attraction subjects showed negative or low-positive affect in the November Raven administration, the increase in positive affect they demonstrated as a group at later administrations was not differential by treatment condition.

A second area to which one might look for generalization is the relationship with peers. Although it was anticipated that any differential changes in relationships to peers between experimental and control <u>S</u>s might be a consequence of processes more complicated than simple

generalization, it is possible to look at the data from this perspective. Again, the data on peer relations is negative with regard to generalization of treatment effects, in that the experimental and control subjects did not differ in magnitude of change in average strength of attachment to peers or in number of attached classmates from pre-treatment to post-treatment.

Independent of the question of whether the treatment induced broadly generalized increases in interpersonal attraction, it was predicted that increased attraction to the treating teacher would increase the value of her social reinforcements. Increased valuation of the teacher's approval and attention, would then lead to improvements in the child's classroom adjustment, assuming that receipt of these reinforcements was contingent upon acceptable behavior. When experimental and control subjects were compared with regard to change on the three principle components of a 26-item rating scale of classroom adjustment, no evidence of a treatment effect was found.

Failure to find the predicted differential change in adjustment between experimental and control subjects could be explained in several ways. First, one might argue that there was insufficient change in attraction to the treating assistant teacher, or that increased attraction failed to generalize to the head teacher who is really more influential in the classroom. Second, it may be that there were treatment-induced increases in the value of social reinforcements but they did not result in greater behavior change for experimental subjects, because the teachers employed inappropriate or inefficient contingencies of reinforcement. While certainly a possibility, this second explanation can neither be quickly embraced nor lightly dismissed. After all, the prior prediction of improvement in adjustment for the experimental group was based, in part, on the assumption that teachers, as a group, employ reasonably efficient reinforcement contingencies. Nonetheless, one could argue that unresponsive and shy/avoidant children had learned specialized behavior strategies which succeeded in obtaining social reinforcement for maladaptive behaviors which were thereby maintained in the classroom environment (see Harris, Wolf & Baer, 1967).

A third possibility is that there was spread of the treatment effects beyond the experimental subjects to other similar children in the classroom, namely, the control children. It will be recalled that each of six classrooms contained two experimental and two control children. The purpose of this design feature was to control for the effects of teacher personality and classroom atmosphere across the treatment and control conditions. If all experimental subjects had been in classrooms 1, 2, and 3 and all control subjects in classrooms 4, 5, and 6, treatment effects would have been confounded with effects of teacher personality and classroom atmosphere. The design alternative chosen, while providing the same teacher personality and classroom atmosphere for each matched pair, left open the opportunity for the treating teacher to employ newly acquired techniques or attitudes to the control subjects in her classroom. Even though the control subjects were never identified to any teacher as being in the study, it seems plausible that teachers might have decided on their own that these procedures were applicable to control subjects because of their behavioral similarity to the experimental subjects.

The reactions of treating teachers during the course of treatment procedure added further to the plausibility of such a spread of treatment effects. At the outset it was particularly difficult for some of the teachers to initiate interactions with shy or unresponsive children because they perceived, perhaps correctly, that these children did not welcome interaction. They needed the support and encouragement of the experimenter to proceed. However, many of the teachers reported change in the experimental subjects' desire to interact with them, which may have reinforced a new style of relating to similar children in the classroom. Another area in which teacher training effects may have generalized, was paying compliments to children. All teachers agreed that complimenting two experimental children twice during a class session was a discriminable change from their prior rate of interaction with these children, and that giving five compliments to each child in one session was a real challenge to their ingenuity and executive ability. Giving compliments became easier as the treating teachers all came to understand clearly that the sole purpose of the compliment was to make the child feel good and not to reward desirable behavior. Once freed of their own contingency assumptions, many more occasions became appropriate for the delivery of compliments.

The above observations suggest that the training given the assistant teachers in the implementation of the treatment, produced permanent alteration in their teaching-role behavior. These changes could easily have affected control subjects in a direction comparable to their intended impact on experimental subjects. A more conclusive test of the efficacy of this type of treatment program would require a design in which teachers trained in the treatment procedure have no opportunity for contact with control subjects.

Change from Fall to Spring. In the course of conducting this study data were collected which bear upon the validity of the teacher's nominations of children to the Unresponsive, Shy/Avoidant, and High Attracted groups. The data also provided a fuller description of the behavioral characteristics of the children who were assigned to these categories and of their change in adjustment over the school year.

Children nominated by teachers as shy and avoidant of adults were found to have weak attachments to peers, that is, their four closest attachments to classmates were weaker than those of all other groups, including the Unresponsive group. While the strength of attachment to peers was seen to increase from November to March for the Shy/Avoidant subjects, they remained significantly lower than the other groups, which also increased in average strength of attchment to peers. The OBAT measure assessed another aspect of peer attachment, i.e., the number of a child's classmates who manifest an attachment to him. Again this number was lowest, on the average, for the Shy/Avoidant group. In other words, the Shy/Avoidant children were least popular in the sense that fewer children showed preference for proximity to them and concern over their absence. They were not, however, significantly lower than the unresponsive group.

A clue to the causes of the lack of mutual peer attachment may be found in the scores these Shy/Avoidant children received on the Social Assertiveness factor of the 26-item teacher rating scale. The Shy/Avoidant group was significantly lower on this factor than any other group, which means that they were rated lower on items with high factor loadings such as activity, aggression, and spontaneity. The picture whichemerged of the Shy/Avoidant child was one

of broadly generalized social withdrawal which included a low level of interaction with both peers and adults. This broad pattern of social withdrawal suggests that social interactions are either punishing or not rewarding for these children. Supporting this inference was the affect rating of the Shy/Avoidant group during the November administration of the Raven test. This was the only group with a mean affect score on the negative side of the scale.

Lack of intellectual ability does not seem to be implicated in their social withdrawal, since the group did not differ significantly from the middle attraction group in intelligence as measured by the Raven test or reflected in the Intellectual Competency factor derived from teacher ratings. Neither did it appear that their social isolation was a consequence of rejection by others, since the teachers' ratings suggested that, as a group, they were at least as socially compatible as the Middle Attraction group. They were seen as average or above on traits such as cooperativeness with peers, tolerance for frustration, and negative attention seeking which had high loadings on the Social Compatibility factor. This data is consistent with the conclusion that the stimulus events which derive from social interaction are not rewarding, and possibly punishing, for Shy/Avoidant subjects. Significant increases from Fall to Spring on strength of peer attachments, social assertiveness, and affect during test administration for the Shy/Avoidant children suggested that there was improvement over the school year in their tolerance for social interaction with peers and adults.

The most distinctive feature of the Unresponsive group was their considerable inferiority to all other groups on the Social Compatibility factor derived from the November administration of the 26-item rating scale. Items with high loadings on this factor reflected cooperativeness with peers and adults, tolerance for frustration, and negative attention seeking (inversely weighted). These qualities are in close agreement with the behavioral criteria teachers employed in the nomination of children for this group. The criteria focused on the child's lack of response to approval and disapproval from the teacher and problems of unmanagability.

The Unresponsive group was no different from the Middle Attraction group in mean strength of attachment to peers or on social assertiveness. Unresponsive subjects

were slightly lower than Middle Attraction subjects in number of attached classmates, ratings of intellectual competency and November Raven test scores, but these differences did not reach the .05 level of significance.

Although the Unresponsive group was much lower than all other groups on the November ratings of Social Compatibility, by May their mean score had risen significantly, and, while still having the lowest group mean, they now differed significantly only from the group with the highest mean, the Shy/Avoidant subjects. Thus, it would appear that the Unresponsive group also improved in the area of their greater deficiency, i.e., in their ability to get along harmoniously with others. To the extent that getting along with others had the prerequisite of being responsive to social approval, it may be possible that the increase in social compatibility was mediated by an increase in responsiveness to social reinforcement.

It is not possible to discern whether this improvement was influenced in some way by the experimental procedures taught to the teachers or was simply the degree of improvement in social compatibility typically experienced in a well run nursery school program. On the one hand, spread of treatment effects may have increased responsiveness to social approval; alternatively, modeling and reinforcement with appropriate contingencies may have been responsible for the improvement shown by the unresponsive subjects.

The High Attraction group was found to have mean scores on all of the variables assessed for the total nursery school population which were either higher than or not significantly lower than the mean scores of all other groups. While these subjects were identified for their ease and responsiveness to teachers, the positive character of their social relationship seemed to extend to other adults, as reflected in affect ratings during Raven tests, and to their peers, as reflected in the strength of their peer attachments and the large number of classmates who were attached to them. In November they were rated as significantly more socially compatible and socially assertive than any other group. In May they were still more socially assertive than any group, but had dropped significantly in social compatibility. Nonetheless, they were second only to the Shy/Avoidant subjects in social compatibility in May

and not significantly different. By both teachers' ratings and objective measurement (the Raven) they tended to have the highest intellectual ability although not significantly higher than the Middle Attraction subjects.

Considered as a whole, the group differences on these various measures of social and intellectual behavior support the utility of the categories shy/avoidant and unresponsive and provide evidence that the teachers, in nominating children to these categories, responded in a consistent and meaningful manner. These two categories are similar to patterns of deviant behavior observed by Bell, Weller, and Waldrop (1971) in preschoolers in a nursery school setting. They also seem to reflect the less socially desirable ends of two orthogonal dimensions which have appeared repeatedly in factor analyses of multiple trait ratings of the social behavior of young children (Baumrind & Black, 1967; Becker & Krug, 1964; Schaefer, E.S. 1961). One of these dimensions has been labeled hostility—love and is similar to the Social Compatibility factor of the present study, on which unresponsive children initially scored low. The other dimension, introversion-extroversion parallels the Social Assertiveness factor of the present study, on which shy/avoidant children scored low in both Fall and Spring. Comparisons of introversion-extroversion scores and similar dimensions within pairs of fraternal and identical twins have yielded evidence of a significant hereditary component in children (Scarr, 1965) and adults (Gottesman, 1966). Such a genetic contribution to Shy/Avoidant behavior patterns may place limits on the ease and degree of change that can be affected by various treatment methods. It is known that, in the absence of treatment, this dimension of child behavior is fairly stable over periods of several years beginning in the preschool years (see review by Emmerich, 1967).

The treatment method employed in the present study bears marked similarity to that employed recently in a case study using the own control ABAB design (Levison, 1971). Levison placed a social isolate child in a small room containing play materials with a peer having strong social interaction skills for daily 15 minute play periods. In 15 days the isolate child showed marked increases in social interaction which generalized to the free play

situation with other peers. The difference between the present study and Levison's procedure was that adults rather than peers were the treatment agents in the interaction sessions. The prolonged exposure to social stimulation by a peer which Levison provided may have reduced its aversiveness. No doubt the sociable peer provided persistent eliciting cues which instigated and reinforced new behaviors on the part of the isolate child.

O'Conner (1969, 1972) found that adult social reinforcement did not augment the marked social interaction increments produced in social-isolate preschoolers by viewing a film which provided graduated modeling and instruction in initiating peer interaction. However, other case studies (for example, Allen, Hart, Buel, Harris & Wolf, 1964) have shown positive effects of adult social reinforcement on peer interaction in preschoolers. The limited improvement of the Shy/Avoidant subjects in the present study and the success of O'Conner's modeling film and the Levison procedure suggest that increasing the value of the teacher's social approval may be less useful in eliminating peer avoidance than procedures, including teacher reinforcement, which instigate direct interaction with peers. Exposure to both the social overtures of peers and the proprioceptive feedback from the isolate child's own novel and emerging social responses is likely to be initially aversive, and strongly so for those with a genetic disposition to introversion. However, continued exposure should lead to habituation of the emotional response which previously supported avoidance behaviors, thus freeing the child for rewarding social interactions.

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Appendix A

Teacher Nomination Form

Below you will find descriptions of two types of children. List the four children in your class who most closely fit each category. Since all aspects of the category may not apply to a given child, please rate the suitability of the category using the following scale:

1. Definitely fits this category
2. Possibly fits this category
3. Doubtful case for this category

A child who may tend to

a) avoid eye contact
b) speak infrequently to adults
c) be somewhat inhibited with adults
d) move away from adults if they come close
e) avoid asking for help from adults

Child's name	Suitability Rating
1._____	_____
2._____	_____
3._____	_____
4._____	_____

A child who seems to

a) care little about the teacher's approval or disapproval
b) show little anticipation of disapproval when he (she) does something which merits disapproval
c) be slow at times in responding to teacher's requests
d) care little about doing a good job or pleasing the teacher in other ways
e) be difficult to manage at times
f) need more than the usual amount of correction or supervision

Child's Name	Suitability Rating
1._____	_____
2._____	_____
3._____	_____
4._____	_____

List below, in rank order, the six (6) children in your class who are most <u>at ease</u> and <u>responsive</u> in their interaction with adults.

1._____

2._____

3._____

4._____

5 _____

6._____

Appendix B

Structured Observations with Assistant Teacher

We would like to observe each of the children on the attached list in a structured interview with the assistant teacher during free activity period. We will be observing children in all of the classrooms as part of our procedure for selecting children to participate in an experiment on social interaction. Therefore, we would like the conditions of the interview to be as nearly alike in each room as possible.

Specific instructions: During the free activity period look for the first child on the list. If he is not deeply engrossed in play, approach him (her) with the following statement:

> Hello (child's name). I have not talked with you for a long time. Come over here by the window and we will sit down and talk.

Don't encourage the child to talk on the way to the window. However, if he does talk, give neutral replies. When you arrive at the window and are seated, ask the following question:

> What do you like to do when your daddy is home?
> (Change to mommy if family is not intact.)

Begin counting to yourself after the question. If you reach 5 before the child replies, ask the same question again, and count 5 seconds. When the child replies and pauses say--Mmhum--and wait for continuation. If the child does not continue in 3 seconds say:

> That's very interesting. What does your mommy do every day?

Again wait 5 seconds for a reply, then repeat the question.

When the child concludes his response to the second question, give him a sheet of paper, take him to a table, and ask him to color a picture for you.

> (Child's name), I would like you to color a nice picture for me.
>
> Here is a piece of paper and you can do it right here at this table.

Do <u>not</u> give the child the crayons. Turn immediately and walk away. The purpose of the task is to see if the child will ask someone to help him get crayons so he can fulfill the teacher's request.

Record Form
Structured Interview

Head Teacher:_____ Child:_____

Asst. Teacher:_____ Date: _____

Follows Teacher

1	2	3	4	5
Strong by Teacher Prompt	Teacher - Prompt	Long Hesitation	Slight Hesitation	Immediate

1st Question

Verbal Response:

1	2	3	3	4	5
None with Repeat	One or two words after Repeat	several words After Repeat	One or two words No Repeat	Several words No Repeat	More than one Sentence No Repeat

Eye Contacts

1	2	3	4	5
None at all	Fleeting Glances	Partial or Intermittent Normal	Normal Occasional Breaks Communication Contact	Sustained Above average Eye Contact

2nd Question

Verbal Response:

1	2	3	3	4	5
None with Repeat	One or two words after Repeat	Several words After Repeat	One or two words No Repeat	Several words No Repeat	More than one Sentence No Repeat

Eye Contacts

1	2	3	4	5
None at all	Fleeting Glances	Partial or Intermittent Normal	Normal Occasional Communication Contact	Sustained Above average Eye contact

Reaction to Crayon Task

Unresponsive

1U	2U	3U
Wanders off to play after teacher leaves (within 5 secs)	Wanders off to play after brief wait (more than 5 secs., less than 30 secs.)	Looks for crayons briefly and immediately, then wanders off to play

Avoidant

1A	2A	3A
Long wait, Teacher says "Can I help," Child does not respond in relation to problem	Long wait. "Can I help?" Child asks for crayons	Child sits a while, then looks extensively for crayons, and finally wanders off without contacting teacher--or asks for crayons after a long delay (≠ 30 secs.)

Responsive

4R	5R
Asks teacher for crayons, immediately or after short delay.	Looks immediately for crayons, then asks teacher for help.

Instructions to Video Tape Raters

Ratings for verbal responses

The scale below will be employed to make three ratings of the child's verbal responsiveness during the interview.

In each interview you will see, the teacher will follow the same format. She will ask two pre-planned questions that are the same in all interviews and then ask or discuss anything she wishes with the child. The first question begins after the child is seated. The teacher will ask, "John, what do you like to do at school the best?" She will then wait for an answer and if she receives one will say, "That's very interesting." However, if the child does not respond, the teacher will repeat the question. Your cue in rating verbal responsiveness is the teacher's saying, "That's very interesting." At this point record your rating from the Verbal Response Scale. Note that this scale has three ratings for repeated questions and three ratings for unrepeated questions.

Next, the teacher will ask, "What do you like to do at home?" As with question 1, she will repeat this if the child does not answer the first time. After the child completes his answer, you will make Rating #2 of verbal responsiveness.

Rating #3 is to be made at the conclusion of the interview and based on the child's verbal responsiveness during the free discussion segment of the interview.

VERBAL RESPONSE

1	2	3	4	5	6
None with Repeat	One or two words after repeat	Several words after repeat	One or two words No Repeat	Several words No Repeat	More than one sentence No Repeat

Ratings of eye contact

The scale below will be employed to make three ratings of the child's eye contact with the teacher during the interview. In each interview the teacher follows the same format. She will ask two pre-planned questions that are the same in all interviews and then ask or discuss anything she wishes with the child. The first question begins after the child is seated.

The teacher will ask, "John, what do you like to do at school the best?" She will then wait for an answer and if she receives one will say, "That's very interesting." However, if the child does not respond, the teacher will repeat the question. Your cue in rating eye contact for Rating #1 is the teacher's saying, "That's very interesting." At this point record your rating from the Eye Contact Scale.

Next the teacher will ask, "What do you like to do at home?" As with question 1, she will repeat this if the child does not answer the first time. After the child completes his answer, you will make Rating #2.

Rating #3 is to be made at the conclusion of the interview and based on the child's eye contact during the free discussion segment of the interview.

Eye Contact Scale

1	2	3	4	5
None at all	Fleeting Glances	Normal; Partial or Intermittent	Normal; Occasional Breaks Communi-cation Contact	Sustained Above Average Eye Contact

Rating of Affect

The scale below will be employed to make a rating of affect for each child appearing on the video tapes. Play the tapes in order from number 1 through number 5, and rate the children in the order of appearance. The recording sheet contains the names of the children in that order. For this rating the sound should be turned on. It is very important that the rating made be recorded beside the name of the correct child. Check your sheet when each child is announced to be sure you are rating the right child. The rating of affect you make should represent your observations of the child throughout his interview and not just one small part of it.

AFFECT SCALE

Negative Affect						Positive Affect
1	2	3	4	5	6	7
Some crying, pouting or wimpering, or verbal expression of intense dislike	Frequent frowning, or verbal expression of dis-pleasure	Slight verbal or facial expres-sion of dis-pleasure	No expres-sion or affect	Slight verbal or facial expres-sion of pleasure	Frequent smiling or verbal expression of pleasure	Some laughter or giggling, or verbal expression of strong liking

Appendix C

Treatment Schedule

Teacher's Name:_____ Child's Name:_____

Treatment number	Treatment of the Day				
	number of compliments	conversation in class (min.)	Play out of the class (min.)	Date administered to child	Note Written (✓)
1	5			Dec.	
2	5			Dec.	
3	4	5		Dec.	
4	4	5			
5	3	5	3		
6	3	5	3		
7	2		10		
8	2	5			
9	2		10-15	Jan.	
10	2		10-15	Jan.	
11	2		10-15	Jan.	
12	2		10-15	Jan.	
13	2		10-15	Jan.	
14	2	5			
15	2		10-15		
16	2		10-15		
17	2	5		Feb.	
18	2		10-15	Feb.	
19	2	5		Feb.	
	Follow-up interviews				

Appendix D

Rating Scales of Classroom Adjustment and Derivation of Factor Scores

Table 5

Rating Scales of Classroom Adjustment (After Grossman, and Levy, 1968) and Loadings on Three Principle Components Following Varimax Rotation [a]

Scale Number and Description			Varimax Loadings		
			Social Asser-tiveness 27.2%	Social Compati-bility 13.2%	Intellectual Competency 27.4%
1. At ease versus shy.					
Very self-confident (socially)	1 2 3 4 5	Unconfident (socially)	.77	.22	.36
2. Does what he is told					
Very cooperative (with adults)	1 2 3 4 5	Uncooperative (with adults)	.32	.80	.31
3. Able to play without fights; engage in cooperative play.					
Gets along very well (peers)	1 2 3 4 5	Doesn't get along well (peers)	.51	.69	.29
4. Plays with and interested in others.					
High social orientation (peers)	1 2 3 4 5	Low social orientation (peers)	.78	.25	.12
5. Seeks approval by cooperation, calling attention to good work.					
Positive attention seeking	1 2 3 4 5	Low positive attention seeking	.63	.29	.07
6. Disruption, etc. for purpose of calling attention to self.					
High negative attention seeking	1 2 3 4 5	Low negative attention seeking	.31	-.65	-.27

Table 5--Cont.

Scale Number and Description	Social Asser-tiveness 27.2%	Social Compati-bility 13.2%	Intellectual Competency 27.4%
7. Physical and verbal aggression toward peers and adults. Very aggressive 1 2 3 4 5 Unaggressive	.79	-.42	-.03
8. Seems to recognize needs of others. Very empathetic 1 2 3 4 5 Unempathetic	.56	.40	.42
9. Degree child organizes and successfully controls others. Leader 1 2 3 4 5 Follower	.77	-.02	.43
10. "Stick-to-it-tive-ness" in task behavior. Very persistent 1 2 3 4 5 Gives up easily	.09	.34	.79
11. Attention span especially in listening to direction or story. Very long attention span 1 2 3 4 5 Very short attention span	-.09	.47	.72
12. Thinks or seems to have plan in mind before doing puzzles, paintings, etc. Very planful 1 2 3 4 5 Unplanful	-.04	.22	.86
13. Ability to alter routines and task approaches Very flexible 1 2 3 4 5 Unflexible	.34	.47	.59
14. Makes unique approaches and/or products. Very original 1 2 3 4 5 Unoriginal	.32	-.08	.65
15. Degree of help seeking. Very inde-pendent 1 2 3 4 5 Dependent	.33	.13	.69

Table 5--Cont.

Scale Number and Description			Social Assertiveness 27.2%	Social Compatibility 13.2%	Intellectual Competency 27.6%
16. Competence in doing tasks.					
Successful at problem solving	1 2 3 4 5	Unsuccessful at problem solving	.29	.22	.83
17. Competitive, likes to do well.					
High in achievement orientation	1 2 3 4 5	Low in achievement orientation	.46	.01	.67
18. Handling of objects, kicking, running, etc.					
Very coordinated	1 2 3 4 5	Awkward	.33	.22	.57
19. Running about versus sitting in one place.					
Very active (motor)	1 2 3 4 5	Sluggish	.84	-.07	-.11
20. Chatters to self, adults, peers.					
Very talkative	1 2 3 4 5	Very quiet	.83	-.16	.20
21. Ability to consider abstract concepts.					
High ability to abstract	1 2 3 4 5	Low ability to abstract	.18	.12	.84
22. Interest in objects, ideas.					
Very curious	1 2 3 4 5	Not curious	.62	.12	.49
23. Ability to accept failure, to be interrupted.					
High tolerance for frustration	1 2 3 4 5	Low tolerance for frustration	-.02	.49	.57
24. Ability to handle feelings					
Good self-control	1 2 3 4 5	Poor self-cont.	-.15	.51	.64
25. "Free" and open versus constricted, cautious.					
Highly spontaneous	1 2 3 4 5	Inhibited	.83	.05	.17

Table 5--Cont.

Scale Number and Description			Social Asser-tiveness 27.2%	Social Compati-bility 13.2%	Intellectual Competency 27.6%
26. Clarity of sex role.					
Resembles own sex type	1 2 3 4 5	Resembles opposite sex type	.47	.26	.07

[a]Percent of total variance accounted for by the component after varimax rotation. Component names were assigned on the basis of the content of items with high loadings.

Table 6

Means, Standard Deviations, and Varimax Weights for Rating Scales of Classroom Adjustment[a]

Scale number and name	M	SD	Verimax Weights Social Asser-tiveness	Social Compati-bility	Intellec-tual Competency
1. Self-confidence	2.68	1.16	.112	.047	-.018
2. Cooperation Adults	2.34	1.13	.050	.328	-.121
3. Gets along Peers	2.49	1.02	.081	.281	-.116
4. Social Orientation	2.60	1.06	.132	.115	-.091
5. Positive Attention	2.32	1.02	.111	.141	-.099
6. Negative Attention	3.79	1.05	.060	-.248	.045
7. Aggression	3.14	1.16	.129	-.180	.019
8. Empathy	2.88	.89	.071	.115	-.021
9. Leader	3.14	1.03	.097	-.086	.056
10. Persistence	2.68	1.02	-.044	-.012	.135
11. Attention Span	2.49	1.11	-.066	.066	.101
12. Planful	2.83	1.00	-.075	-.087	.191
13. Flexible	2.80	.92	.022	.106	.026
14. Original	2.83	.83	-.003	-.176	.170
15. Independence	2.64	1.01	.001	-.080	.131
16. Problem Solving	2.56	.93	-.015	-.071	.154
17. Achievement Orientation	2.39	.88	.023	-.134	.143
18. Coordination	2.28	.95	.013	-.011	.079
19. Motor Activity	2.48	1.00	.155	.012	-.088
20. Talkative	2.57	1.14	.124	-.099	.018
21. Abstract Abil.	2.77	.97	-.039	-.124	.189
22. Curiosity	2.37	.84	.069	-.033	.054
23. Frustration Tolerance	2.99	.86	-.040	.111	.049
24. Self-control	2.71	1.14	-.069	.103	.074
25. Spantaneity	2.61	1.03	.130	-.040	-.015
26. Sex Type	2.85	.69	.083	.126	-.081

[a]The principle components analysis with varimax rotation was computed on the November, 1969 averaged ratings of head and assistant teachers for 108 nursery school pupils (56 females and 52 males).

Derivation of scores for Social Assertiveness, Social Compatibility, and Intellectual Competency: For each principle component, scores were computed for each subject in z-score form (mean of zero and SD of one) employing the following formula:

$$z = VWt_1 \frac{X_1 - \bar{X}_1}{SD_1} + VWt_2 \frac{X_2 - \bar{X}_1}{SD_2} + \ldots + VWt_{26} \frac{X_{26} - \bar{X}_{26}}{SD_{26}}$$

In which: VWt = Varimax weight

X_1 = Subjects raw rating on scale one (the average of the head and assistant teachers' ratings).

$\bar{X}_1$ = The mean rating of all subjects on scale number one.

SD_1 = The standard deviation of ratings for all subjects on scale number one.

The set of z-scores for each component were then converted to T-scores by use of the following formula:

$$T = z\ (-10.0) + 50.0$$

In order that high scores would reflect high degrees of the named trait, the scales were reversed by using minus ten rather than the usual plus ten in the formula above.